

ABSTRACT OF THE DISCLOSURE

An ultrasonic driving apparatus consists mainly of a digital oscillatory circuit, an amplifier, a detection circuit, a phase difference detection circuit, a register, a data transfer circuit, and a switching circuit. The digital oscillatory circuit is used to drive an ultrasonic transducer at the resonance frequency of the ultrasonic transducer. The amplifier amplifies a driving signal output from the digital oscillatory circuit. The detection circuit detects the phase θ_v of an applied voltage and the phase θ_i of an induced current from the driving signal applied to the ultrasonic transducer via the amplifier. The phase difference detection circuit detects a difference between the phases θ_v and θ_i . The register holds digital frequency data with which a frequency at which the digital oscillatory circuit is oscillated is determined, and changes the digital frequency data. The data transfer circuit transfers the digital frequency data to the register. The switching circuit is interposed between the phase difference detection circuit and register.